

**REMARKS**

Applicants note with appreciation the acceptance of their Request for Continued Examination, and the entering of the claim amendments contained therein.

The Examiner has presented several rejections and then addresses applicants' responses to the previous office action. Applicants will first address the rejections, and then the Examiner's comments also.

**CLAIM REJECTIONS**

Claims 1-4 and 6-10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent Number 6,086,749, Kramer, et al. ("Kramer") in view of United States Patent Number 4,414,141, Schindler ("Schindler"). The Examiner continues to describe the reasons for rejection of the individual claims, and applicants will address these rejections in the order listed in the office action for completeness.

**FIRST REJECTION UNDER 35 U.S.C. 103**

Claims 1 and 3 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer in view of Schindler.

**EXAMINER'S POSITION**

The Examiner takes the position that Kramer discloses a process for the hydroconversion of a hydrocarbon feed in the presence of a catalyst mixture of two catalysts that each contain Group VIB and VIII metals on a porous organic support where at least 75% of the total pore volume are in pores between about 20 to about 30nm and less than 10% of the total pore volume is in pores within the range of 0 to 10nm. The Examiner continues that the catalysts of Kramer have a surface area ranging from at least about 200 to about 600m<sup>2</sup>/g and a pore volume ranging from about 0.8 to about 3.0cc/g. The Examiner also states that Kramer discloses that the difference between the densities in the first and second catalyst can be +/-10wt.%.

The Examiner notes, however, that Kramer does not disclose that the second catalyst has at least 5% of the pore volume in pores with a diameter of at least 100nm. However, the Examiner contends that Schindler discloses a catalyst that has 0.25cc/g out of 1.20cc/g in pores with a diameter of at least 100nm, and continues that Schindler discloses that this catalyst also has increased catalyst life.

Therefore, the Examiner takes the position that it would have been obvious to one having ordinary skill in the art to modify the process of Kramer to include a catalyst that has 0.25cc/g out of 1.20 cc/g in pores with a diameter.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that the present invention is not obvious in light of the teachings of Kramer or the teachings of Kramer in combination with Schindler.

The present invention, as amended, relates to a process for hydroprocessing a heavy hydrocarbon oil and the catalyst mixture used therein. The process involves contacting a heavy hydrocarbon oil in the presence of hydrogen with a mixture of hydroprocessing catalyst I and hydroprocessing catalyst II, and the catalyst mixture herein claimed is the mixture of hydroprocessing catalyst I and hydroprocessing catalyst II. Catalyst I comprises a Group VIB metal and optionally a Group VIII metal on a porous inorganic carrier. Catalyst I is further described as having a specific surface area of  $100\text{--}180\text{ m}^2/\text{g}$ , a total pore volume of at least  $0.55\text{ ml/g}$ , and a pore size distribution for inhibiting sediment formation and promoting asphaltene removal such that at least 50% of the total pore volume in pores with a diameter of at least  $20\text{ nm}$  ( $200\text{ \AA}$ ) and at least 65% of the total pore volume in pores with a diameter of  $10\text{--}120\text{ nm}$  ( $100\text{--}1200\text{ \AA}$ ), wherein less than 25% of the total pore volume of catalyst I is in pores having a diameter of  $10\text{ nm}$  ( $100\text{ \AA}$ ) or less. Catalyst II comprises a Group VIB metal and optionally a Group VIII metal on a porous inorganic carrier. Catalyst II is further described as a specific surface area of at least  $100\text{ m}^2/\text{g}$ , and a pore size distribution for providing catalytic activity and inhibiting sediment formation such that a total pore volume of at least  $0.55\text{ ml/g}$ , 30-80% of the pore volume in pores with a diameter of  $10\text{--}20\text{ nm}$  ( $100\text{--}200\text{ \AA}$ ), and at least 5% of the pore volume in pores with a diameter of at least  $100\text{ nm}$  ( $1000\text{ \AA}$ ), wherein less than 25% of the total pore volume of catalyst II is in pores having a diameter of  $10\text{ nm}$  ( $100\text{ \AA}$ ) or less. The present claims further include the limitation that catalyst I has a larger percentage of its pore volume in pores with a diameter of at least  $20\text{ nm}$  ( $200\text{ \AA}$ ) than catalyst II.

Applicants first take the opportunity that the teachings of Kramer require that the BET of both catalysts be at least  $200\text{ m}^2/\text{g}$ , when the catalysts have a pore volume of  $0.8\text{ to }3.0\text{ cc/g}$ , see col. 33, lines 6-11. Thus applicants take the position that the currently amended claims, based on BET alone or unobvious in light of Kramer. Applicants further take the position that the combination of Kramer and Schindler would not obviate the present claims based on the BET limitation of catalyst I alone. Applicants note that Schindler does disclose at col. 1, lines 56-60, that the catalysts used therein can have a BET of "...at least  $125\text{ m}^2/\text{g}$ , and most generally from  $150\text{--}300\text{ m}^2/\text{g}$ ". However, one having ordinary skill in the art would not find it obvious to use a catalyst that has a BET of less than at least  $200\text{ m}^2/\text{g}$ , Schindler, in a process that teaches that the BET of a first catalyst suitable for use therein be at least  $200\text{ m}^2/\text{g}$ , Kramer. Thus, applicants take

the position that the combination of Schindler and Kramer is improper, and applicants further take the position that even if deemed proper, which applicants do not concede, would not be proper to provide for a first catalyst as is claimed through the present amendment. Instead, one would only be taught to use a catalyst having a BET of greater than 200m<sup>2</sup>/g.

Thus, applicants respectfully take the position that the presently amended claims are unobvious in light of Kramer and Schindler based on the BET of catalyst I alone.

However, applicants respectfully point out that the present claims further include the limitation that catalyst I has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than catalyst II. Applicants respectfully submit that neither Kramer, Schindler, nor the combination of Kramer and Schindler includes a teaching, motivation, or suggestion that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst. In fact, Kramer is completely silent as to maintaining the pore volume of either catalyst in relation to the other catalyst. Note, since Schindler only teaches a single catalyst, it is also completely silent as to the limitation that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst

With regards to claim 3, claim 3 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 3 includes all of the limitations of novel, independent Claim 1, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

#### **SECOND REJECTION UNDER 35 U.S.C. 103**

Claim 2 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer.

#### **EXAMINER'S POSITION**

The Examiner takes the position that Claim 2 is obvious in light of Kramer for the reasons noted on page 5 of the office action.

#### **APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 2 is not obvious in light of the teachings of Kramer. Claim 2 is a dependent claim and by definition include all of the limitations of the claims from which they depend. Therefore, claim 2 includes all of the limitations of novel, independent Claim 1, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**THIRD REJECTION UNDER 35 U.S.C. 103**

Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer.

**EXAMINER'S POSITION**

The Examiner takes the position that Claim 4 is obvious in light of Kramer for the reasons noted on page 5 of the office action.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 4 is not obvious in light of the teachings of Kramer. Claim 4 is a dependent claim and by definition include all of the limitations of the claims from which they depend. Therefore, claim 4 includes all of the limitations of novel, independent Claim 1, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**FOURTH REJECTION UNDER 35 U.S.C. 103**

Claim 6 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer.

**EXAMINER'S POSITION**

The Examiner takes the position that Claim 6 is obvious in light of the teachings of Kramer for the reasons noted on page 5 of the office action.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 6 is not obvious in light of the teachings of Kramer. Claim 6 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 6 includes all of the limitations of novel, independent Claim 1, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**FIFTH REJECTION UNDER 35 U.S.C. 103**

Claims 7 and 9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer in view of Schindler.

**EXAMINER'S POSITION**

The Examiner takes the position that Claim 7 is obvious in light of the teachings of Clark in combination with Schindler for the reasons noted on pages 5-7 of the office action. In short, the Examiner has rejected Claim 7 for the same reasons discussed above in relation to the First Rejection under 103(a). The Examiner continues that claim 9 is also rejected in light of these disclosures.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that claims 7 and 9, as amended, are not obvious in light of the teachings of Kramer or the teachings of Kramer in combination with Schindler.

Claim 7, as amended, relates to a mixture of hydroprocessing catalyst I and hydroprocessing catalyst II. Catalyst I comprises a Group VIB metal and optionally a Group VIII metal on a porous inorganic carrier. Catalyst I is further described as having a specific surface area of 100-180 m<sup>2</sup>/g, a total pore volume of at least 0.55 ml/g, and a pore size distribution for inhibiting sediment formation and promoting asphaltene removal such that at least 50% of the total pore volume in pores with a diameter of at least 20 nm (200 Å) and at least 65% of the total pore volume in pores with a diameter of 10-120 nm (100-1200 Å), wherein less than 25% of the total pore volume of catalyst I is in pores having a diameter of 10 nm (100 Å) or less. Catalyst II comprises a Group VIB metal and optionally a Group VIII metal on a porous inorganic carrier. Catalyst II is further described as a specific surface area of at least 100 m<sup>2</sup>/g, and a pore size distribution for providing catalytic activity and inhibiting sediment formation such that a total pore volume of at least 0.55 ml/g, 30-80% of the pore volume in pores with a diameter of 10-20 nm (100-200 Å), and at least 5% of the pore volume in pores with a diameter of at least 100 nm (1000 Å), wherein less than 25% of the total pore volume of catalyst II is in pores having a diameter of 10 nm (100 Å) or less. The present claims further include the limitation that catalyst I has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than catalyst II.

Applicants first take the opportunity that the teachings of Kramer require that the BET of both catalysts be at least 200m<sup>2</sup>/g for catalysts having a pore volume of 0.5 to 3.0cc/g, see col. 33, lines 6-11. Thus, applicants take the position that the currently amended claims, based on BET alone or unobvious in light of Kramer. Applicants further take the position that the combination of Kramer and Schindler would not obviate the present claims based on the BET limitation of catalyst I alone. Applicants note that Schindler does disclose at col. 1, lines 56-60, that the catalysts used therein can have a BET of "...at least 125m<sup>2</sup>/g, and most generally from 150-300m<sup>2</sup>/g". However, one having ordinary skill in the art would not find it obvious to use a catalyst that has a BET of less than be at least 200m<sup>2</sup>/g, Schindler, in a process that teaches that the BET of a first catalyst suitable for use therein be at least 200m<sup>2</sup>/g, Kramer. Thus, applicants take the position that the combination of Schindler and Kramer is improper, and applicants further take the position that even if deemed proper, which applicants do not concede, would not

be proper to provide for a first catalyst as is claimed through the present amendment. Instead, one would only be taught to use a catalyst having a BET of greater than  $200\text{m}^2/\text{g}$ .

Thus, applicants respectfully take the position that the presently amended claims are unobvious in light of Kramer and Schindler based on the BET of catalyst I alone.

However, applicants respectfully point out that the present claims further include the limitation that catalyst I has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than catalyst II. Applicants respectfully submit that neither Kramer, Schindler, nor the combination of Kramer and Schindler includes a teaching, motivation, or suggestion that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst. In fact, Kramer is completely silent as to maintaining the pore volume of either catalyst in relation to the other catalyst. Note, since Schindler only teaches a single catalyst, it is also completely silent as to the limitation that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst.

With regards to claim 9, claim 9 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 9 includes all of the limitations of novel, independent Claim 7, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**SIXTH REJECTION UNDER 35 U.S.C. 103**

Claim 8 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer.

**EXAMINER'S POSITION**

The Examiner takes the position that Claim 8 is obvious in light of the teachings of Kramer for the reasons noted on page 7 of the office action.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 8 is not obvious in light of the teachings of Kramer. Claim 8 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 8 includes all of the limitations of novel, independent Claim 7, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**SEVENTH REJECTION UNDER 35 U.S.C. 103**

Claim 10 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer.

**EXAMINER'S POSITION**

The Examiner takes the position that Claim 10 is obvious in light of the teachings of Kramer for the reasons noted on page 7 of the office action.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 10 is not obvious in light of the teachings of Kramer. Claim 10 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 10 includes all of the limitations of novel, independent Claim 7, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**EIGHTH REJECTION UNDER 35 U.S.C. 103**

Claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer in view of Schindler as applied to claim 1, and further in view of United States Patent Number 4,069,139, Riley, et al. ("Riley").

**EXAMINER'S POSITION**

The Examiner has cited Riley to provide disclosure of a heavy hydrocarbon feed having the properties noted on page 7 of the office action.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that Claim 5 is not obvious in light of the teachings of Kramer, in light of Schindler, in further view of Riley. Claim 5 is a dependent claim and by definition includes all of the limitations of the claims from which it depends. Therefore, claim 5 includes all of the limitations of novel, independent Claim 1, and is therefore novel and unobvious in light of Kramer for, among other reasons, the reasons discussed above.

The Examiner is requested to reconsider and withdraw this rejection.

**REMARKS TO RESPONSE TO ARGUMENTS**

In this section, applicants will address the Examiner's comments in the order presented and the numbers below correspond to the Examiner's paragraph numbers.

**PARAGRAPH 13**

**EXAMINER'S POSITION**

The Examiner notes that applicants' arguments are not persuasive because Kramer discloses a surface area of the catalysts is typically in the range of 50 to 300m<sup>2</sup>/g, citing col. 38,

lines 23-28; col. 41, lines 35-36; and col. 45, lines 66-67. The Examiner continues that with Schindler's disclosure of catalyst surface areas in the range of 150-300m<sup>2</sup>/g, col. 1, lines 56-57, it would have been obvious to one having ordinary skill in the art to combine Kramer's and Schindler's teaching because both are teaching identical catalysts.

**APPLICANTS' POSITION**

Applicants have maintained their position, as noted above. Kramer includes conflicting statements regarding the catalysts used therein. At col. 32, line 66 to col. 33, line 11, Kramer makes clear that:

“the catalyst, catalyst precursor, or precatalyst also include a combination of properties comprising...a surface area ranging [from] at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g, and a pore volume ranging from about 0.8 to about 3.0cc/g and preferably from about 1.1 to about 1.9cc/g (B.E.T.).”

Applicants agree with the Examiner, however, that col. 38, lines 23-28 clearly state that:

“The catalyst has a surface area (such as measured by the B.E.T. method) sufficient to achieve the hydroprocessing objectives of the particular application. Surface area is typically from about 50 sq. meters per gram to about 300 sq. meters per gram, more typically from about 75 sq. meters per gram to about 150 sq. meters per gram.”

The Examiner combines these two conflicting disclosures, however. The section cited by the Examiner concerning a pore volume of 0.8 to 3.0cc/g is disclosed in the section concerning catalysts having a BET surface area of at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g. This section is at col. 32, line 66 to col. 33, line 11, as reproduced above.

The section cited by the Examiner concerning a BET surface area of from about 50 sq. meters per gram to about 300 sq. meters per gram, more typically from about 75 sq. meters per gram to about 150 sq. meters per gram is complete devoid of teachings or disclosure concerning pore volume. In fact, the entire section entitled “The Catalyst” is completely devoid of any disclosure concerning pore volume.

Thus, applicants again assert, that the catalysts disclosed in Kramer having a pore volume of 0.8 to 3.0cc/g are only those having a BET surface area of greater than 200m<sup>2</sup>/g, as discussed above and previously. Therefore, one having ordinary skill in the art would not combine the teachings of Kramer with Schindler, nor would such a combination obviate the present invention. In addition, one having ordinary skill in the art would not combine the conflicting teachings



noted above because of the vast differences between the BET surface area of the catalysts in these two sections.

#### **PARAGRAPH 14**

#### **EXAMINER'S POSITION**

The Examiner notes that applicants' arguments are not persuasive because Kramer discloses that the catalyst has about 50%, preferably about 75% of its total pore volume in the range of about 200 to 300Å(20-30nm), citing col. 33, lines 1-4. The Examiner continues that Kramer further discloses that the difference in density of the two catalysts is about  $\pm 1\%$  to about  $\pm 10\%$ , citing col. 33, lines 12-17. The Examiner then states that assuming a similar correlation between the percentage of the pore volume in pores with a diameter of at least 20nm, it is expected that the difference between the percentage of the pore volume in pores with a diameter of at least 20nm for the first and second catalyst will be in a range included as claimed.

#### **APPLICANTS' POSITION**

Applicants have maintained their position regarding this point, as noted above. Applicants again point out first that the section cited by the Examiner refers to catalysts having a BET surface area of at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g, which is clearly outside of the presently claimed range.

Applicants also again respectfully point out that there is no teaching in Kramer, Schindler, nor the combination includes a teaching, motivation, or suggestion that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst.

Applicants are also quite confused by the Examiner's attempt to correlate discussion concerning catalyst density to pore volume. Applicants respectfully submit that there is no way to make such a correlation, and any such correlation is incorrect.

In addition, even if such a correlation is correct, which applicants expressly submit is not, the application of such a correlation to Kramer is an improper use of hindsight. Kramer is completely devoid of any discussion regarding maintaining the pore volume of the first catalyst with respect to the second catalyst, or vice versa, and is also completely devoid of any teaching that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst. It is only with the improper use of hindsight based on the present disclosure that such an improper application can be inferred or derived from Kramer.

Further, applicants also submit that the Examiner's characterization that the section cited reads that the difference in density of the two catalysts is about  $\pm 1\%$  to about  $\pm 10\%$  is incorrect. The section cited by the Examiner reads:

“...the difference in density between the catalyst particles of 10A and catalyst particles 10B is more than about  $\pm 1\%$  by weight, more preferably more than about  $\pm 5\%$  by weight, and most preferably more than about  $\pm 10\%$  by weight.”

Thus, again, even if the improper application of the correlation between density was applied to the differences in pore diameters, one could not arrive at the present limitation that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst.

**PARAGRAPH 15**

**EXAMINER'S POSITION**

The Examiner notes that applicants' arguments are not persuasive because claim 1 is obvious over Kramer in view of Schindler.

**APPLICANTS' POSITION**

Applicants have maintained their position, and applicants again assert, based on the above arguments, that claim 1 is not obvious over Kramer in view of Schindler. Thus, claims 2-4 and 6 are also unobvious for at least the same reasons.

**PARAGRAPH 16**

**EXAMINER'S POSITION**

With regards to claims 7-9, the Examiner has again asserted his arguments presented under Paragraph 13. The Examiner notes that applicants' arguments are not persuasive because Kramer disclose a surface area of the catalysts is typically in the range of 50 to 300m<sup>2</sup>/g, citing col. 38, lines 23-28; col. 41, lines 35-36; and col. 45, lines 66-67. The Examiner continues that with Schindler's disclosure of catalyst surface areas in the range of 150-300m<sup>2</sup>/g, col. 1, lines 56-57, it would have been obvious to one having ordinary skill in the art to combine Kramer's and Schindler's teaching because both are teaching identical catalysts.

**APPLICANTS' POSITION**

Applicants have maintained their position, as noted above. Kramer includes conflicting statements regarding the catalysts used therein. At col. 32, line 66 to col. 33, line 11, Kramer makes clear that:

“the catalyst, catalyst precursor, or precatalyst also include a combination of properties comprising...a surface area ranging [from] at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g...”

Applicants agree with the Examiner, however, that col. 38, lines 23-28 clearly state that:

“The catalyst has a surface area (such as measured by the B.E.T. method) sufficient to achieve the hydroprocessing objectives of the particular application. Surface area is typically from about 50 sq. meters per gram to about 300 sq. meters per gram, more typically from about 75 sq. meters per gram to about 150 sq. meters per gram.”

Thus, applicants submit that it is unclear from Kramer what catalysts are actually useful in the process therein. It would not have been obvious to one having ordinary skill in the art to select one BET surface range over another, and in fact would have provided conflicting teachings since one range referred to when discussing the Figures and Catalyst 10A and 10B discloses ranges clearly outside those disclosed in another section.

The Examiner combines these two conflicting disclosures, however. The section cited by the Examiner concerning a pore volume of 0.8 to 3.0cc/g is disclosed in the section concerning catalysts having a BET surface area of at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g. This section is at col. 32, line 66 to col. 33, line 11 and reads:

“the catalyst, catalyst precursor, or precatalyst also include a combination of properties comprising...a surface area ranging [from] at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g, and a pore volume ranging from about 0.8 to about 3.0cc/g and preferably from about 1.1 to about 1.9cc/g (B.E.T.).”

The section cited by the Examiner concerning a BET surface area of from about 50 sq. meters per gram to about 300 sq. meters per gram, more typically from about 75 sq. meters per gram to about 150 sq. meters per gram is complete devoid of teachings or disclosure concerning pore volume. In fact, the entire section entitled “The Catalyst” is completely devoid of any disclosure concerning pore volume.

Thus, applicants again assert, that the catalysts disclosed in Kramer having a pore volume of 0.8 to 3.0cc/g are only those having a BET surface area of greater than 200m<sup>2</sup>/g, as discussed above and previously. Therefore, one having ordinary skill in the art would not combine the teachings of Kramer with Schindler, nor would such a combination obviate the present invention. In addition, one having ordinary skill in the art would not combine the conflicting teachings

noted above because of the vast differences between the BET surface area of the catalysts in these two sections.

#### **PARAGRAPH 17**

#### **EXAMINER'S POSITION**

The Examiner has repeated the reasoning discussed in Paragraph 14. The Examiner notes that applicants' arguments are not persuasive because Kramer discloses that the catalyst has about 50%, preferably about 75% of its total pore volume in the range of about 200 to 300Å(20-30nm), citing col. 33, lines 1-4. The Examiner continues that Kramer further discloses that the difference in density of the two catalysts is about  $\pm 1\%$  to about  $\pm 10\%$ , citing col. 33, lines 12-17. The Examiner then states that assuming a similar correlation between the percentage of the pore volume in pores with a diameter of at least 20nm, it is expected that the difference between the percentage of the pore volume in pores with a diameter of at least 20nm for the first and second catalyst will be in a range included as claimed.

#### **APPLICANTS' POSITION**

Applicants have maintained their position regarding this point, as noted above. Applicants again point out first that the section cited by the Examiner refers to catalysts having a BET surface area of at least about 200m<sup>2</sup>/g to about 600m<sup>2</sup>/g, and preferably at least about 250m<sup>2</sup>/g to about 450m<sup>2</sup>/g, which is clearly outside of the presently claimed range.

Applicants also again respectfully point out that there is no teaching in Kramer, Schindler, nor the combination includes a teaching, motivation, or suggestion that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst.

Applicants are also quite confused by the Examiner's attempt to correlate discussion concerning catalyst density to pore volume. Applicants respectfully submit that there is no way to make such a correlation, and any such correlation is incorrect.

In addition, even if such a correlation is correct, which applicants expressly submit is not, the application of such a correlation to Kramer is an improper use of hindsight. Kramer is completely devoid of any discussion regarding maintaining the pore volume of the first catalyst with respect to the second catalyst, or vice versa, and is also completely devoid of any teaching that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst. It is only with the improper use of hindsight based on the present disclosure that such an improper application can be inferred or derived from Kramer.

Further, applicants also submit that the Examiner's characterization that the section cited reads that the difference in density of the two catalysts is about  $\pm 1\%$  to about  $\pm 10\%$  is incorrect. The section cited by the Examiner reads:

“...the difference in density between the catalyst particles of 10A and catalyst particles 10B is more than about  $\pm 1\%$  by weight, more preferably more than about  $\pm 5\%$  by weight, and most preferably more than about  $\pm 10\%$  by weight.”

Thus, again, even if the improper application of the correlation between density was applied to the differences in pore diameters, one could not arrive at the present limitation that the first catalyst has a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than the second catalyst.

**PARAGRAPH 18**

**EXAMINER'S POSITION**

The Examiner notes that applicants' arguments are not persuasive because claim 7 is obvious over Kramer in view of Schindler.

**APPLICANTS' POSITION**

Applicants have maintained their position, and applicants again assert, based on the above arguments, that claim 7 is not obvious over Kramer in view of Schindler. Thus, claims 8 and 10 are also unobvious for at least the same reasons.

**PARAGRAPH 19**

**EXAMINER'S POSITION**

The Examiner notes that applicants' arguments are not persuasive because claim 1 is obvious over Kramer in view of Schindler and further in view of Riley.

**APPLICANTS' POSITION**

Applicants have maintained their position, and applicants again assert, based on the above arguments, that claim 1 is not obvious over Kramer in view of Schindler. Thus, claim 5 is also unobvious for at least the same reasons.

Based on the preceding remarks, the Examiner is requested to reconsider and withdraw all rejections, and pass this application to allowance. The Examiner is encouraged to contact applicants' attorney should the Examiner wish to discuss this application further.

Respectfully submitted,

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